WHAT IS CLAIMED IS:

1. A movement control system for a robot having a base
and a plurality of movable regions connected to the base,
the system comprising:

fundamental constraint-condition setters for setting
movement constraint-conditions, which are imposed in
accordance with a task and a movement state applied to the
robot, for each kind of constraint;

a constraint-condition setting unit for imposing the
movement constraint conditions of the entire robot necessary
for a state variation of the robot by selectively using the
appropriate fundamental constraint-condition setter in
accordance with a movement-constraint requirement produced
during execution of a task and a movement of the robot; and

a drive-amount determining unit for determining a drive
amount of each of the movable regions so as to satisfy the
entire movement-constraint conditions set by the constraint-
condition setting unit.

2. A system according to Claim 1, wherein the
plurality of movable regions comprise at least an upper limb,
a lower limb, and a body section.

3. A system according to Claim 1, wherein a posture

angle of the entire robot is expressed using a virtual joint angle of a virtual link.

4.   A system according to Claim 1, wherein each of the fundamental constraint-condition setters for each kind of constraint expresses movement constraint conditions imposed in accordance with a task and a movement state of the robot as a linear equality of a variation of a state variable.

5.   A system according to Claim 4, wherein each of the fundamental constraint-condition setters expresses a constraint equation by a Jacobian form.

6.   A system according to Claim 1, wherein each of the fundamental constraint-condition setters expresses a movement constraint condition imposed in accordance with a task and a movement state of the robot as a linear inequality equation of a variation of a state variable.

7.   A movement control system for a robot having a base and a plurality of movable regions connected to the base, the system comprising:

fundamental redundancy drive-method setters for setting redundancy drive-methods, which are changed in accordance with a task and a movement state applied to the robot, for

each kind of norm;

a redundancy drive-method setting unit for setting redundancy drive-methods of the entire robot by selectively using the appropriate fundamental redundancy drive-method setter in accordance with a requirement for changes generated during execution of a task and a movement of the robot; and

a drive-amount determining unit for determining a drive amount of each of the movable regions so as to satisfy the redundancy drive-method set by the redundancy drive-method setting unit.

8. A movement control system for a robot having a base and a plurality of movable regions connected to the base, the system comprising:

equality-constraint condition setters for expressing movement constraint-conditions, which are imposed in accordance with a task and a movement state applied to the robot, for each kind of constraint by a linear equality equation of a variation of a state variable;

an equality-constraint condition setting unit for imposing movement-constraint conditions of the entire robot necessary for a state variation of the robot by selectively using the appropriate equality-constraint condition setter in accordance with a requirement for a movement constraint

generated during execution of a task and a movement of the robot;

inequality-constraint condition setters for expressing movement constraint-conditions, which are imposed in accordance with a task and a movement state applied to the robot, for each kind of constraint by a linear inequality equation of a variation of a state variable;

an inequality-constraint condition setting unit for imposing movement-constraint conditions of the entire robot necessary for a state variation of the robot by selectively using the appropriate inequality-constraint condition setter in accordance with a requirement for a movement constraint generated during execution of a task and a movement of the robot;

fundamental redundancy drive-method setters for setting redundancy drive-methods, which are changed in accordance with a task and a movement state applied to the robot, for each kind of norm;

a redundancy drive-method setting unit for setting redundancy drive-methods of the entire robot by selectively using the appropriate fundamental redundancy drive-method setter in accordance with a requirement for changes generated during execution of a task and a movement of the robot; and

a drive-amount determining unit for determining a drive

amount of each of the movable regions so as to entirely satisfy equality and inequality-constraint conditions of the entire robot set by the equality-constraint condition setting unit and the inequality-constraint condition setting unit, and to entirely satisfy redundancy drive-methods of the entire robot set by the redundancy drive-method setting unit.

9. A system according to Claim 8, wherein the plurality of movable regions comprise at least an upper limb, a lower limb, and a body section.

10. A system according to Claim 8, wherein a posture angle of the legged walking robot is expressed using a virtual joint angle of a virtual link.

11. A system according to Claim 8, wherein each of the equality-constraint condition setters expresses a constraint equation by a Jacobian form.

12. A system according to Claim 8, wherein the drive-amount determining unit comprises:

a quadratic programming-problem solver for solving a variation of a state variable of the robot by formulating equality and inequality-constraint conditions of the entire

robot and redundancy drive-methods of the entire robot as
quadratic programming-problems; and

an integrator for calculating a state of the robot at a
succeeding time by integrating a variation of a state
variable.